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# The Relationship Between Workplace Civility Level and the Experience of Burnout Syndrome Among Helping Professionals

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## 1. Introduction

The most important stimuli for our experience and behaviour arise in the psychosocial sphere. An increased psychosocial load – related to work and non-work problems – can bring about serious health problems. Beehr (1995:11) defined job stress as “a situation in which some characteristics of the work situation are thought to cause poor psychological or physical health or to cause risk factors making poor health more likely”. According to Maslach (2011), stressful jobs are as bad for people’s health as smoking and obesity.

However, similar stress triggers different consequences in different individuals and different work settings. What largely explains the difference in outcomes is the moderating effect of risk and support factors. In the case of work stress, the primary moderating factors are social support, psychological safety and organizational civility, as perceived by the worker.

In this chapter we will summarize the most important findings relating to these three factors from the literature, and their impact on mental health risk factors known as burnout syndrome. Then we will present research on a sample of Czech helping professionals to examine whether there are any cultural differences in the way workplace civility levels predict early signs of burnout. Suggestions for workplace management and further research will conclude the chapter.

## 2. Job strain

Helping professionals typically engage in highly demanding jobs with heavy workloads and high levels of responsibility. The demands placed on these individuals have long been thought to be a major reason for the development of distress. As demands increase, stress also increases. If the level of stress increases beyond an individual’s ability to cope, the person will likely develop distress (Karasek & Theorell, 1990). When the state of stress is prolonged, chronic stress results, with burnout syndrome as a possible outcome.

Control over one’s job duties (“decision latitude” according to Karasek, 1979, or “autonomy of work” according to Beehr, 1995) and the way these duties are completed is another factor

closely linked to the development of distress. Decision latitude refers to employee control over their tasks and how their tasks are executed. It describes the possibility to influence the pace of work, its character and conditions (Karasek, 1979). Perceptions regarding the amount of control in the work setting and whether these perceptions meet individual needs for a degree of autonomy have an immediate effect on the experience of stress (Karasek & Theorell, 1990).

This model is called the demand-control model, and describes the combination of high demand and low control (decision latitude) typical of high strain jobs (Karasek, 1979).

Stress in the helping professions stems mostly from time pressure, shift work, night shifts, prolonged shifts (12 hours), work overload, contact with ill and disabled people and death, helplessness in fatal cases, insufficient sleep and insomnia, the grief of family and relatives, and responsibility in serious situations. A stressful situation can also be caused by clients who can act inadequately because of their fear and inability to cope with a difficult situation; they can be agitated, anxious, arrogant and undisciplined, and may disturb communication. Maturity and experience are necessary for helping professionals, especially when dealing with child clients and with their accompanying persons (Drozdová & Kebza, 2011).

A further frequent source of stress is the accumulation of work tasks with an inadequate number of personnel in an unstable and badly coordinated work team with unclear and undefined work competencies, under suddenly changing work conditions or tensions resulting from difficult interpersonal relationships in the workplace. Another negative factor is dissatisfaction with low financial and social assessment (Drozdová & Kebza, 2011). According to Jones (1987), nursing is the profession with the lowest life expectancy, which can be explained by the corresponding stressfulness of the work.

### 3. Burnout and its measurement

Burnout syndrome is defined in the literature as negative personal changes that occur over time in persons engaged in a helping profession whose jobs are demanding or frustrating (Cherniss, 1980, 1989, 1990).

According to Maslach and Jackson (1986:1), "burnout is a syndrome of emotional exhaustion, depersonalization and reduced personal accomplishment that can occur among individuals who do 'people work' of some kind". Maslach and colleagues further argued that burnout is characterized by emotional exhaustion (a manifestation of individual stress), cynicism (a job response), and professional inefficacy (a self-evaluation). Emotional exhaustion is considered the core element of burnout, resulting in cynicism toward one's work and colleagues and low efficacy levels (Leiter & Maslach, 2004).

Shirom (2003) particularly emphasized the mental component of exhaustion, which comprises elements of resignation and frustration, ensuing from the disproportion between the effort and energy invested in performing what is categorized as "working with people" and the relatively small manifest results of this effort. The experienced pointlessness of the effort also leads to inhibition of spontaneity and creativity. In the activities of the affected individual, routine procedures, stereotyped phrases and clichés begin to predominate. The inhibition of empathy and loss of positive attitude towards people who should be provided a certain service (e.g. patients, clients and citizens) is also marked. In this context, some

authors (e.g. Maslach, Schaufeli & Leiter, 2001) speak of a “dehumanized perception of environment”.

Burnout syndrome was first studied from the psychological point of view, with researchers showing interest in psychological reactions to stress and describing its psychological impact. In the 1990s, however, the organizational context of burnout became a topic of study as the concept of organizational culture – as a common environment created by shared beliefs, perceptions, and expectations of individuals (Schein, 1990) – was raised in relations to job satisfaction. Burnout syndrome emerges especially in certain professions as a result of a combination of factors, including chronic stress and a marked drop in motivation, interest in work and sense of satisfaction (Maslach & Leiter, 1997; Kebza & Šolcová, 1998, 2008). This occurs when the job demands exceed the ability of individuals to cope, and they become overwhelmed by the stress of the activity. However, as stress involves subjective as well as objective aspects, how the employee perceives the load and the meaning of the activity is of great significance, as well as the person’s perception of management and the entire work environment. The outcomes of burnout (Maslach, 2011) are poor quality work, low morale, absenteeism, turnover, health problems and family problems. Maslach & Jackson (1981) developed the Maslach Burnout Inventory (MBI), a burnout questionnaire for human service organizations, which has been used extensively for 30 years. On the basis of research results, the MBI was modified to create the MBI General Survey (MBI-GS), a measure of burnout for all occupations, which has been used ever since (Schaufeli et al., 1996). According to Maslach (2011), a score above the median in any dimension of the MBI or MBI-GS is an early sign of burnout.

As early as the 1980s, the professional literature worldwide began to indicate a possible relationship between burnout and cardiovascular disease (CVD) risk factors, CVD being the most common cause of death worldwide. In this context, one has to realize that up to 80% of premature cardiovascular deaths are identified as preventable (WHO, 2009). Many findings (Appels, Otten, 1992; Melamed, Kushnir, Shirom, 1992; Melamed et al., 2006; Shirom, 2007) indicate a very likely relationship between burnout syndrome and acute myocardial infarction, ischaemic heart disease, cerebral apoplexy and sudden cardiac death. The overwhelming majority of cases suggest that burnout syndrome is more likely to precede CVD rather than result from it (Hallman et al., 2003).

In one of the most recent studies of this issue, a longitudinal Japanese study examined the impact of burnout syndrome on the emergence of atherosclerosis, using the Japanese version of the MBI-GS. The authors concluded that burnout resulting from chronic stress, for example, can be related to risk factors for atherosclerosis (Kitaoka-Higashiguchi et al., 2009).

To prevent job strain leading to burnout and/or ill health, job conditions as moderating factors are crucially important, especially social support, psychological safety and workplace civility.

#### **4. Social support as a protection against stress**

Social aspects assume a pivotal position in the understanding of overall individual functioning. The functioning of the individual, however, cannot be understood without taking into account the conditions of the individual’s environment and social context.

One of the first factors identified as a moderator of the influence of unfavourable life events is social support. Although the protective effect of this factor is mentioned in the majority of published studies to date, there is as yet no complete agreement as to the structure of this social support or the essence of its effect.

Sarason (1988) conceives social support as a stress moderator. The basis of social support, obviously, is not so much the general availability of basic social ties but rather their adequacy when unfavourable (stressful) situations develop. Sarason assumes that the perception of social support is particularly important, even more so than the actual support received. Further studies have shown the protective potential of anticipated social support.

Anticipated support is the belief that important persons close to the individual are prepared to help should the need arise (Krause, 1997); it includes the general feeling of being loved, and of having others who take an interest and will help in case of need. It can be best characterized as a feeling of acceptance which contributes to the perception of social support, quite apart from what the social environment actually offers (Sarason et al., 1987). Anticipated social support is usually listed as a resource for coping with stress. The mobilization of social support may be conceived as a strategy for coping with stress (Folkman & Lazarus, 1988).

Received support, on the other hand, means helpful transactions actually provided to the individual; these may be emotional, instrumental or material. Received support is a social or transactional variable determined by a specific pattern of social interaction. Received social support comprises mobilization, receipt and evaluation of received assistance, as part of the process of coping with stress.

Awareness that others are prepared to help creates a sensation of psychological safety, which facilitates risk taking and stimulates people to attempt to resolve problems themselves (Krause, 1997).

## **5. Psychological safety in the work setting**

An important factor in perceiving a work setting as psychologically safe is the extent to which employees are confident that colleagues and supervisors will react constructively towards them (Edmondson, 2003).

The construct of psychological safety has its roots in early research on organizational change, in which Schein and Bennis (1965, cited by Edmondson, 2003) discussed the need to create psychological safety for individuals if they are to feel secure and capable of changing. Psychological safety describes a climate in which people can focus on productive discussion to enable early prevention of problems and the accomplishment of shared goals, because people are less likely to be focused on self-protection (Edmondson, 1999). In psychologically safe environments, according to Edmondson (1999, 2003), people believe that others will not penalize or think less of them if they make a mistake or ask for help, information or feedback. This belief fosters the confidence to take the abovementioned risks and thereby gain from the associated benefits of learning.

Psychological safety reflects the employee's evaluation of a workplace as a supportive environment in which it is safe to raise difficult issues and take risks. An important aspect of



safety is the amount of care and support the employee perceives as provided by the organization as well as by the direct supervisor (Kahn, 1990).

Data collected by Kahn (1990) indicated that four factors influence psychological safety most directly: interpersonal relationships, group and intergroup dynamics, management style, and organizational norms.

Psychological safety is connected to engagement. Leiter and Laschinger (2006) found that psychological safety was positively and significantly related to work engagement (the opposite of burnout). They examined the determinants of psychological safety within organizational culture and climate and, using data from Canadian healthcare providers, produced a model in which workplace civility and congruence between personal and organizational value predicts perceptions of psychological safety.

## **6. Organizational civility as an aspect of organizational culture**

Contemporary organizations require energetic and dedicated employees who engage with their work. A mismatch between people and their work environment reduces work satisfaction, whereas a match enhances satisfaction. Workplace civility and personal-organizational value congruence represent potent predictors of work satisfaction and perceived psychological safety (Leiter & Laschinger, 2006).

Organizational civility is that aspect of an organization's culture that embraces the norm of mutual respect and responsibility (Kimmel, 2001). Fostering civility in the workplace can increase morale, encourage effective communication, decrease turnover, boost service orientation and significantly impact the bottom line. Thus civility can function as a moderator of the stress-stress consequences relationship among employees.

According to Leiter, "civility goes to the heart of quality of work life, empowering employee to fulfil their potential as members of a community through positive working relationships that are a critical resource for providing excellent healthcare" (2008).

Workplace incivility, on the contrary, is defined as "low-intensity deviant behaviour with ambiguous intent to harm the target, in violation of workplace norms for mutual respect" (Andersson & Pearson, 1999: 457, cited by Gill & Sypher, 2009). Incivility in the workplace (e.g. emotional abuse or rudeness) reflects employees' lack of regard for one another. Besides being a stressor itself, incivility exacerbates the relationship between existing job stressors and its consequences among employees.

## **7. Six aspects of the work place and workplace civility**

Burnout is a serious problem. According to Leiter (2008), 20 years of research has shown that burnout is not an individual problem. A shared work environment can make the difference between burnout and engagement with work (Leiter, 2008). Maslach and Leiter concluded that burnout is not a problem of people but mostly of the places in which they work. When the work place does not recognize the human side of work or demands superhuman effort, people feel overloaded, frustrated and burnt out. Intervention on the side of an individual does not eliminate the problem without an intervention on the side of organization. Self-improvement alone cannot overcome the problem.

Maslach and Leiter (1997) identified six areas of the work environment that are most relevant to the relationships people develop with their work.

The above mentioned authors propose that the greater the perceived gap between the person and the job, the greater the likelihood of burnout; conversely, the greater the consistency, the greater the likelihood of engagement with work. Disharmony between the job and the person can result in increased exhaustion, cynicism and inefficacy, whereas harmony can improve employee engagement and work satisfaction. Leiter and Maslach's research (1997) points to six key areas that are pivotal in the job-person match: a manageable workload and a sense of control correspond to Karasek's demand-control model; the other four components are opportunity for reward, a feeling of community, faith in the fairness of the workplace and shared values. The quality of work-life issues in terms of these six factors can be assessed using a tool called the Areas of Worklife Survey.

The *Areas of Worklife Survey* (AWS) was created to assess employee perceptions of the abovementioned qualities of the work setting. In Maslach and Leiter's programme, AWS is used in conjunction with the MBI-GS. The AWS produces a profile of scores that permits users to identify key areas of strength or weakness in their organizational setting.

AWS became part of a Canadian programme known as Civility, Respect and Engagement in the Workplace (CREW), designed to reduce burnout and increase engagement in organizations. The tipping point, according to Maslach (2011) is a mismatch in at least one area of worklife.

## 8. Czech study on workplace civility and burnout

### Objectives

Burnout syndrome and engagement in work are two poles of one dimension, and should not be neglected, as Tanner (2011) points out. Managers, supervisors and coaches are important figures in health organizations who can contribute to a resilient work setting and civility in the work place for healthcare staff, thus building staff engagement and preventing burnout (Leiter & Maslach, 2000). Measuring those traits of organizational culture that either contribute to or hinder employee wellbeing can provide information to managers in larger organizations, contribute to their understanding of how employees perceive their working environment, and be fine tuned by simple testing.

This study aimed to find out whether the correlation between burnout and workplace civility is also applicable in the unique culture of the Czech environment, and if the measures developed by Maslach and Leiter mirror the hypothetical differences between various Czech healthcare and social care settings. If so, use of these two combined methods should be suitable for students of management and supervision in health and social organizations to practise and as a basis for future communication with their employees.

The concrete objective of applying both instruments was to establish the level of organizational civility in Czech healthcare and social care organizations, its influence on signs of burnout according to Leiter and Maslach's model, and how this is influenced by additional factors.

## **Procedure**

The researchers used a snow-ball method to distribute two paper or electronic version of questionnaires, the MBI-GS and the AWS, together with the instructions and a goal description ( "to study the relation of your exhaustion and engagement in work and how you perceive characteristics of your workplace "). Participants had to be nurses or midwives working in the hospital or social workers working in the NGO non-residential social service. The starting group was participants, who were at the same time mature students at the masters programme management and supervision department. They were then asked to distribute the questionnaires on their own wards and to other relevant helping professionals in their field. Participants filled in the questionnaires anonymously. Depending on circumstances, some questionnaires were returned via boxes in the hospital wards, while others were returned directly to the researchers in envelopes. Some of the questionnaires were also sent by students to their colleagues by e-mail and returned by e-mail to the assistant of the school department. The chief motivation for respondents was that they would receive the research results. They were also directly motivated by their colleagues who studied at the above mentioned masters programme.

## **Measures**

As mentioned above, we used two instruments in this study: the Areas of Worklife Survey (AWS, Maslach & Leiter, 1997) and Maslach's Burnout Inventory-General Survey (MBI-GS, Schaufeli, Leiter, Maslach & Jackson, 1996).

### **Burnout dimensions**

The MBI-GS measures the three dimensions considered crucial by the authors: (1) exhaustion, which is related to depletion of energy and emotional and physical fatigue, (2) cynicism, which is conceptually related to lack of involvement, and (3) withdrawal from work and professional efficacy, which is related to the feeling of competence, achievement and accomplishment at work or its opposite - inefficacy.

The questionnaire has 16 items formulated as statements of job-related feelings (e.g. I feel burned out by my work). These are rated on a 6-point Likert scale (ranging from 0=never to 6=daily). The concept of burnout comprises higher scores on exhaustion and cynicism and lower scores on efficacy.

### **Areas of worklife**

The Areas of Worklife Survey (AWS, Leiter & Maslach, 2004) has 29 items divided into 6 sections, namely workload, reward, control, community, fairness, and values, each with three to six items. The items are statements that express an opinion about the work circumstances (e.g. I have enough time to do what is important in my job). Respondents indicate their degree of agreement with these statements on a 5-point Likert's scale (ranging from 1=strongly disagree through 3=hard to decide to 5=strongly agree). Some items are negatively worded and their scores are thus reversed.

Demographic questions included gender, age, level of education, number of years working in this organization, and number of years in the same position. Another question concerned whether the person worked in a small team, a large collective or individually.



Czech sample description

Our sample consisted of healthcare staff (N=169; 71.6%) working in various wards of five different regional and Prague hospitals and social workers working in the NGO fieldwork (N=44; 18.8%). The total number of respondents (N) was 236. 9.7% of the answers on the type of professions were missing. Of the participants, 71 (30.1%) were 29 years or younger, 96 (40.7%) were 30–39 years, 40 (16.9 %) were 40–49 years, and 27 (11.4%) were over 50 years of age. Women made up 83% and men only 15.5% of the sample. Education levels were 34.3% with middle school, 31.4% with high school and 33.9% with a university degree. Additional questions concerned type of contract and team participation, as shown in Table 1. No significant relationships were shown with the type of contract, so this data was not used for further analysis.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Individual	49	20.8	20.9	20.9
	2 Small team	131	55.5	56.0	76.9
	3 Large collective	54	22.9	23.1	100.0
	Total	234	99.2	100.0	
Missing		2	00.8		
Total		236	100.0		

Table 1. Teamwork type.

Goals and outcomes

As our aim was to find out if the correlation between burnout and workplace civility could be replicated in the Czech environment, we started with a descriptive analysis of our data and compared this with data from other studies. We present the results of the psychometric analysis of both instruments within the Czech sample, and also analyse the relationship between the two instruments in the Czech sample.

We were also interested in any differences in perception of the work environment between Czech and Canadian nurses. Lastly, we compared the Czech nurses with a group of social workers to see how the instrument reacted to the differences in their work settings.

Statistical analysis

The following analyses of the Czech data were performed:

- Descriptive statistics of the AWS and MBI-GS scales and their reliability
- Comparison with Canadian samples (AWS and MBI-GS by Leiter)
- Correlation within the AWS and MBI-GS scales
- Correlations between AWS and MBI-GS
- Analysis of difference in scales according to demographic characteristics (age, education, individual/team work)
- Comparison between health workers and social workers

Results

Reliability as measured by the Cronbach alpha test is shown in Tables 2 (a) and (b).

	Workload	Control	Reward	Community	Fairness	Values
Cronbach alfa	0.724	0.495	0.845	0.809	0.818	0.777
Items	6	3	4	5	6	5
Average correlation between items	0.393	0.248	0.582	0.471	0.523	0.423

Table 2(a). AWS reliability.

All scales achieved good item reliability (Cronbach alfa>0.7) except for the item control, which had very low consistency. This was not reported by other researchers in other countries. However in an earlier Czech study low reliability in Control was reported as well (Cronbach alfa=0.53 in Havrdova et al. 2010)

	Exhaustion	Cynicism	Professional efficacy
Cronbach alfa	0.710	0.768	0.794
Items	5	5	6
Average correlation between items	0.465	0.551	0.494

Table 2 (b). MBI-GS reliability.

All MBI-GS scales showed very good reliability in our sample (Cronbach alfa>0.7).

A comparison of Canadian nurses (Leiter, 2003) and the Czech sample (N=234) is shown in Table 3 (a) AWS and Table 3 (b) MBI-GS cut-off values for burnout.

	Canadian sample			Czech sample			
	mean	SD	N	mean	SD	N	p
Workload	2.87	0.84	8609	3.04	0.666	230	0.0023
Control	3.36	0.89	8609	3.47	0.660	229	0.0634
Reward	3.20	0.93	8609	3.21	0.783	229	0.8719
Community	3.46	0.84	8609	3.71	0.659	230	0.0001
Fairness	2.84	0.83	8609	2.88	0.723	230	0.4693
Values	3.42	0.74	8609	3.29	0.683	228	0.9859

Note: unpaired, two-tailed t-test

Table 3 (a). AWS descriptive statistics.

There is a small but statistically significant ( $p>0.05$ ) difference between the Czech (CR) sample and the Canadian 2003 sample perceptions of workload and community, which are higher in CR. The other scales are similar. With the Canadian sample, which Leiter refers to in 2009, we find another significant difference in control, which is lower than in the 2003 sample (3.08).

	N	Min	Max	Mean	SD
Exhaustion (MBI-GS)	226	1	6	<b>2.90</b>	0.940
Cynicism (MBI-GS)	225	0	6	<b>1.46</b>	1.101
Professional efficacy (MBI-GS)	221	1	6	<b>3.62</b>	0.994
Valid N (listwise)	221				

Note: according to Leiter (1998), N=1257, exhaustion=2.98 (SD 1.38), cynicism=1.80 (SD 1.24), professional efficacy = 4.41(SD 0.99). According to Leiter (2009:335), N=709, exhaustion=2.65 (SD 1.47), cynicism=1.82 (SD 1.42), and efficacy=4.45 (SD 0.98).

Table 3 (b). MBI-GS descriptive statistics.

We see therefore that the scores for the Canadian population have not changed much over time. The greatest difference was in the scale professional efficacy, where the Czech nurses reported lower levels than the Canadian nurses. Czech nurses were also somewhat lower on cynicism, although their perceptions of exhaustion were similar.

Correlation of scales within the AWS and MBI-GS are shown in Tables 4 (a) and 4 (b), respectively.

		Workload (AWS)	Control (AWS)	Reward (AWS)	Community (AWS)	Fairness (AWS)	Values (AWS)
Workload (AWS)	Pearson correlation	1					
	Sig. (2-tailed)						
	N	230					
Control (AWS)	Pearson correlation	0.242	1				
	Sig. (2-tailed)	0.000					
	N	229	229				
Reward (AWS)	Pearson correlation	<b>0.369</b>	<b>0.498</b>	1			
	Sig. (2-tailed)	0.000	0.000				
	N	229	228	229			
Community (AWS)	Pearson correlation	0.224	<b>0.348</b>	0.264	1		
	Sig. (2-tailed)	0.001	0.000	0.000			
	N	230	229	229	230		

Fairness (AWS)	Pearson correlation	0.230	<b>0.353</b>	<b>0.535</b>	<b>0.324</b>	1	
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		
	N	230	229	229	230	230	
Values (AWS)	Pearson correlation	0.256	<b>0.494</b>	<b>0.571</b>	0.201	<b>0.637</b>	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.002	0.000	
	N	228	227	227	228	228	228

Note: boldface means correlations R>0.3

Table 4 (a). AWS scale correlations.

Correlations between values and fairness (0.64) and values and reward (0.57) are very high, and higher than in Leiter (2009) (which were 0.55 and 0.40, respectively). Reward and fairness also have very high correlation (0.54) as do reward and control (0.50), but do not differ from the cited sample. On the other hand, the correlation between fairness and control is substantially lower than for Canadian nurses (Czech=0.35, Canada=0.51).

		Exhaustion (MBI-GS)	Cynicism (MBI-GS)	Professional efficacy (MBI-GS)
Exhaustion (MBI-GS)	Pearson correlation	1		
	Sig. (2-tailed)			
	N	226		
Cynicism (MBI-GS)	Pearson correlation	<b>0.548</b>	1	
	Sig. (2-tailed)	0.000		
	N	224	225	
Professional efficacy (MBI-GS)	Pearson correlation	0.031	<b>-0.321</b>	1
	Sig. (2-tailed)	0.643	0.000	
	N	221	221	221

Note: boldface means correlations R>0.3

Table 4 (b). MBI-GS scale correlations.

The strong relationship between cynicism and exhaustion (0.55) is similar to earlier results by Leiter (0.60). The same is true of a weaker negative correlation between efficacy and cynicism (-0.32) as compared to Leiter’s result (-0.40). Our sample shows no correlation between exhaustion and professional efficacy, while Leiter’s result was -0.27.

Table 5 (a) shows the model of relations between the three MBI-GS scales and perceptions of the work environment as predictors of burnout. Correlations between AWS and MBI-GS scales are shown in Tables 5 (a), (b) and (c).

	Exhaustion (MBI-GS)		
	Pearson correlation	Sig. (2-tailed)	N
Workload (AWS)	<b>-0.563</b>	0.000	226
Control (AWS)	-0.172	0.010	225
Reward (AWS)	<b>-0.361</b>	0.000	225
Community (AWS)	-0.203	0.002	226
Fairness (AWS)	-0.284	0.000	226
Values (AWS)	<b>-0.301</b>	0.000	224

Note: boldface means correlations R>0.3

Table 5 (a). Correlations of MBI-GS exhaustion and AWS scales.

The strong relationship between exhaustion and workload suggest a straightforward relationship between workload as a stressor and exhaustion as a reaction to it, which has already been acknowledged by many authors (Leiter & Maslach, 2004; Leiter & Shaugnessy, 2006, Lasalvia et al., 2009; Leiter & Maslach, 2009). The negative correlation between exhaustion and reward and values was also expected. Surprisingly, there was a very low correlation between exhaustion and perceived lack of control over own work (0.36 for Canadian nurses in Leiter & Maslach, 2009). Perceived lack of reward also had a lower correlation with exhaustion than for Canadian nurses (-0.47). Perceived unfairness is nearly as influential in relation to exhaustion as the assessment of value fit with the organization; however, unfairness had a slightly weaker relationship in the Czech sample than in Leiter’s sample (-0.38).

	Cynicism (MBI-GS)		
	Pearson correlation	Sig. (2-tailed)	N
Workload (AWS)	<b>-0.309</b>	0.000	225
Control (AWS)	-0.283	0.000	224
Reward (AWS)	<b>-0.396</b>	0.000	224
Community (AWS)	-0.192	0.004	225
Fairness (AWS)	<b>-0.422</b>	0.000	225
Values (AWS)	<b>-0.464</b>	0.000	223

Note: boldface means correlations R>0.3

Table 5 (b). Correlations of MBI-GS cynicism and AWS scales.

There is a high negative correlation between cynicism and perceived value fit and fairness, and a weaker correlation with reward and workload. In comparison to the Canadian nurses, cynicism is more strongly associated with perceived values of the organization than rewards (for Canadian nurses, reward to cynicism=0.54 and values to cynicism=0.42). This also



corresponds to the central role of value fit as a predictor of burnout and turnover intention among nurses, as Leiter found (Leiter & Maslach, 2009). In his model, value congruence predicted all three dimensions of burnout, while workload was linked to exhaustion. We found the same in our data. This seems to be the best empirically substantiated and theoretically explained part of the burnout and Areas of Worklife relationships model, which has been proven across various populations. On the contrary, the aspect of control over one’s own work, as measured by AWS in the translated Czech version, is rather weaker here. Leiter gives it an important predictive position in his model, although control is not directly predictive of cynicism (Leiter & Maslach, 2009:336).

	Professional efficacy (MBI-GS)		
	Pearson correlation	Sig. (2-tailed)	N
Workload (AWS)	0.098	0.148	221
Control (AWS)	0.297	0.000	220
Reward (AWS)	0.258	0.000	220
Community (AWS)	0.142	0.034	221
Fairness (AWS)	0.239	0.000	221
Values (AWS)	0.282	0.000	219

Table 5 (c). Correlations of MBI-GS professional efficacy and AWS scales.

According to Leiter’s model, professional efficacy is mediated by value congruence (0.38), reward (0.35) and control (0.40). Here the same tendency is at least visible, together with fairness; however, all scores are below 0.3. Control has the highest correlation. Comparisons were done according to characteristics of the sample (age, education, type of work in team, type of contract (full-time, part-time).

Here we present only the significant results. Concerning age and type of contract, there were no significant differences between the results of both instruments.

Figure 1 presents an analysis of variance (ANOVA) for educational level (middle school, high school, university) with the AWS scales. Higher education shows higher congruence with control, reward and value.

Here we see that people working independently perceive more control and much higher rewards but also higher workloads. They perceive more congruence in values with their organization and slightly less fairness than those who work in a small team. People working in large collectives score lowest in all AWS scales.

The results of the t-test (not presented here) show statistically significant differences in all AWS scales. In the one-way ANOVA, nurses showed lower scores on all AWS scales (Figure 3).

The greatest differences between healthcare and social workers were found to be values, fairness and reward, but there are significant differences in all AWS scales. Our sample consisted mainly of two professional groups with contrasting working conditions. The

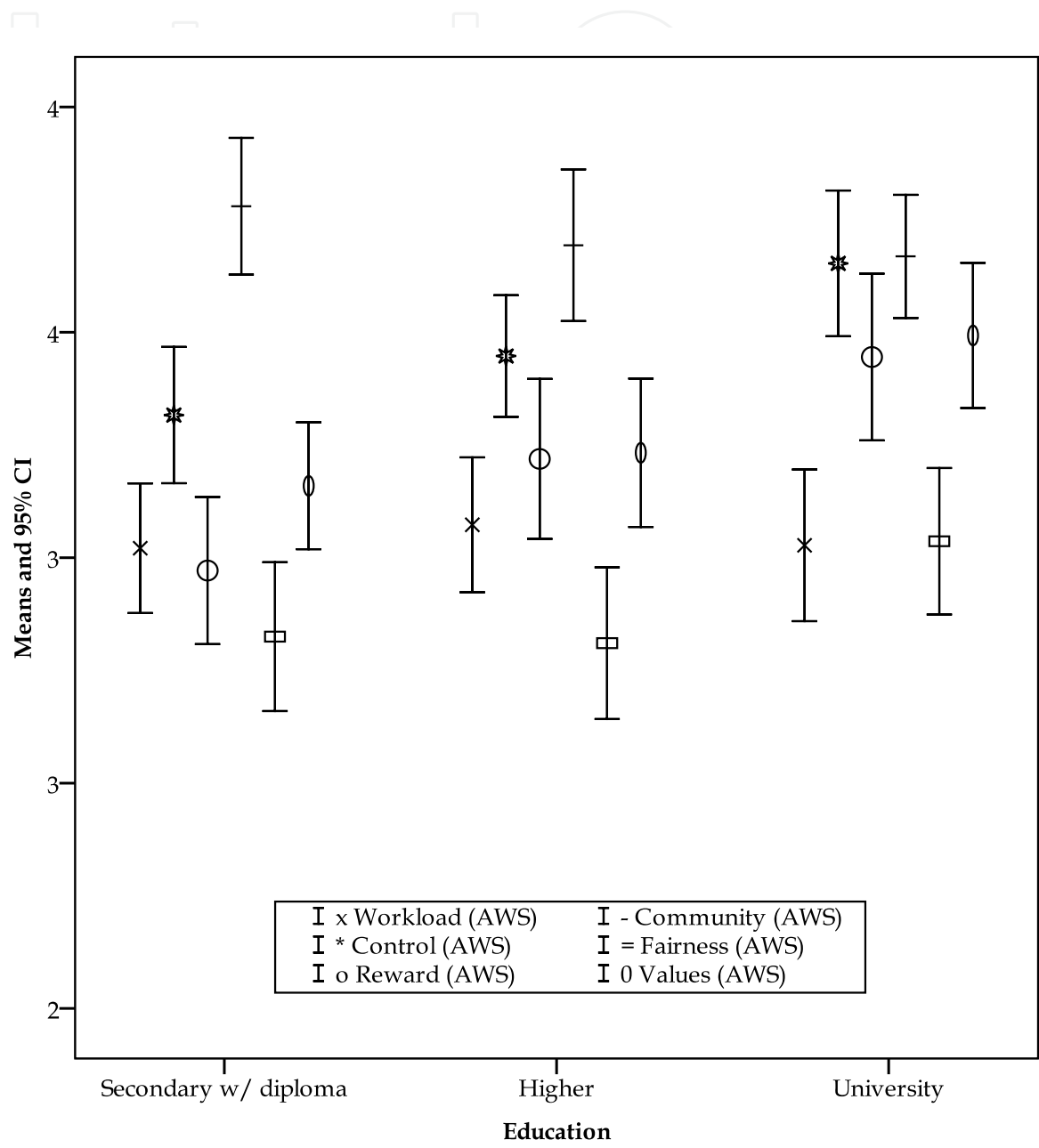


Fig. 1. Education and AWS scales, one-way ANOVA.

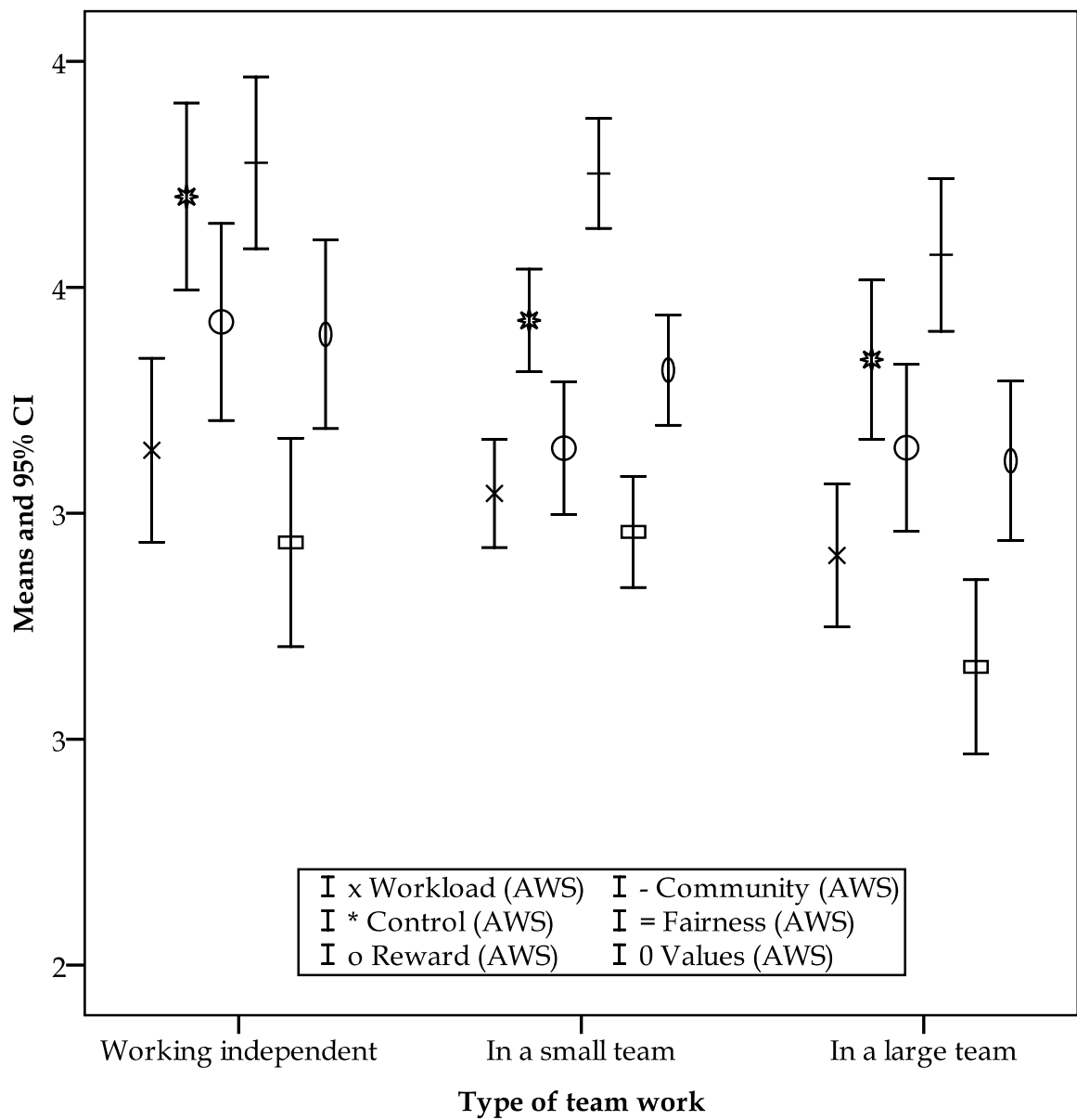
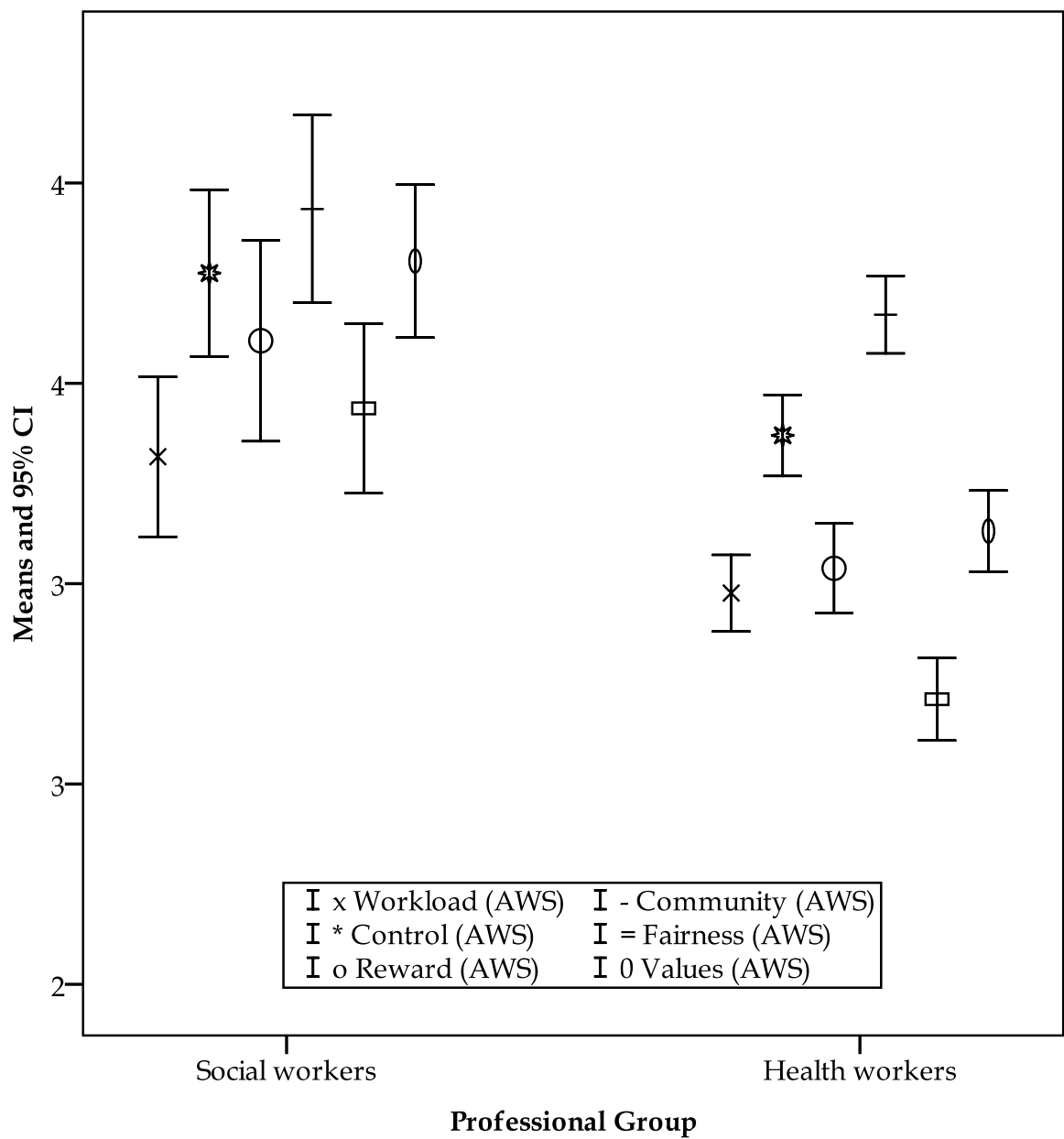


Fig. 2. Type of teamwork (independent, small team, large team) one-way ANOVA, AWS scales.



Note: social workers N=44, health (nurses) N=169

Fig. 3. Comparison between health and social workers AWS.

“health” group consisted of nurses and midwives working in hospitals where management is mostly hierarchical, the culture can be briefly described as outcomes focused, and fiscal restrictions in healthcare are a politically prominent topic. There is generally rather low personal support from the organization, although a shortage of nurses is seen as an important issue.

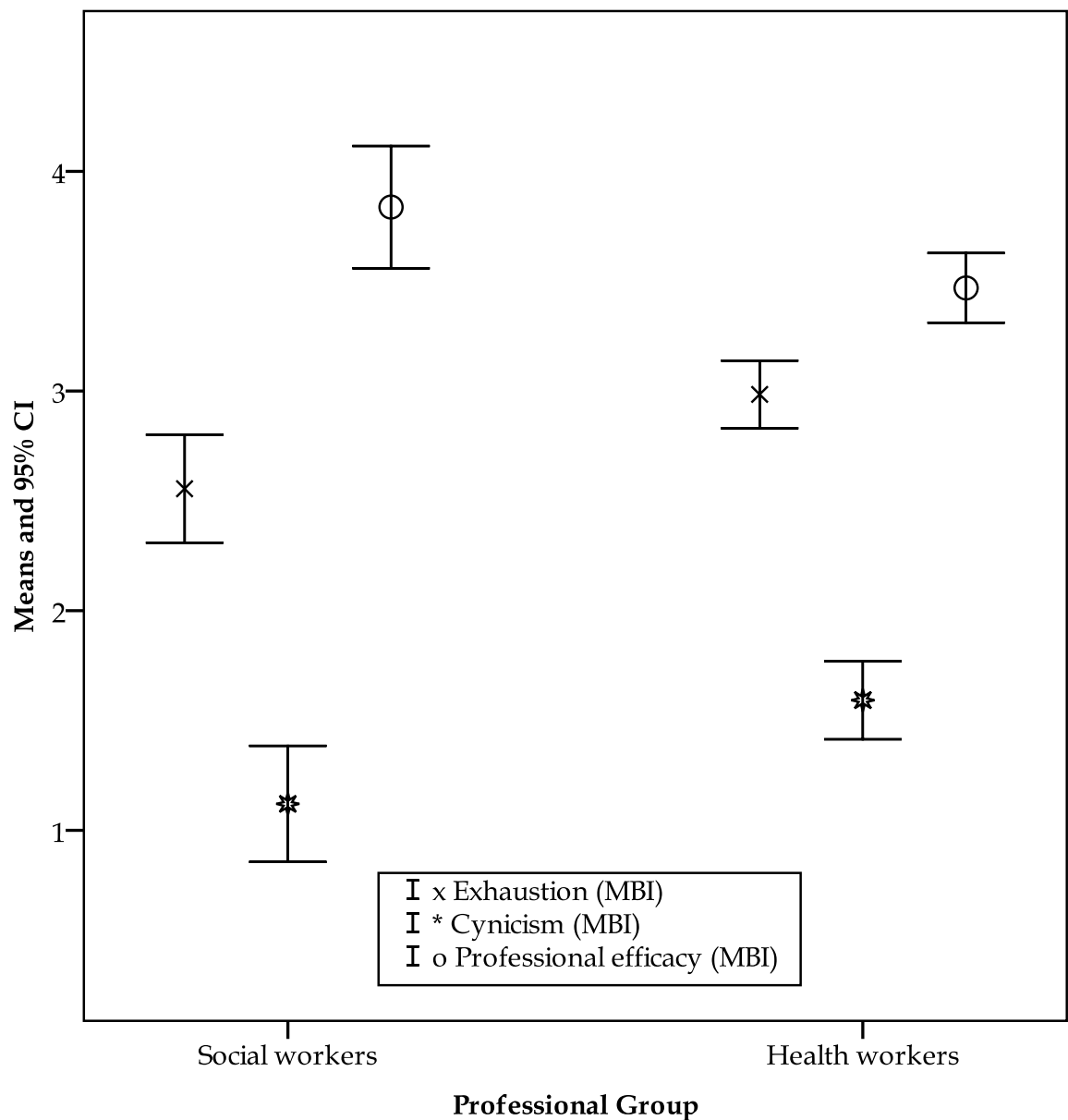


Fig. 4. Comparison between health and social workers MBI-GS.

The “social” group consisted of social workers working in communities in the non-profit sector. In this segment of services, support for employees is some of the best in the field. Most organizations have external team supervision where common issues around social cases and teamwork can be raised and discussed. There is also high participation of organizational members in decision making. These factors influence the attitude of



respondents towards their organization, as mirrored in the AWS reports. This is in contrast with the results of an Italian research team (Lasalvia et al., 2009), where social workers had the higher risk of burnout among mental health professionals, including nurses. Figure 4 compares the Czech nurses and social workers on the MBI-GS scale.

We can see that the health group is at higher risk of burnout than the social group, as mean scores on exhaustion and cynicism are higher (above 3) and professional efficacy is lower. The differences are significant for exhaustion ( $\chi^2 = 5.662$ ,  $df=1$ ,  $p=0.023$ , Contingency coefficient  $CC=0.164$ ) and cynicism ( $\chi^2 = 3.69$ ,  $df=1$ ,  $p=0.077$ ,  $CC= 0.134$ ). No difference was found for professional efficacy.

The high score for exhaustion and cynicism and low score on efficacy corresponds to the Maslach's burnout model.

## Discussion

There was good correspondence between the Leiter and Maslach model measuring burnout together with the traits of organizational civility as perceived by employees and the Czech data. Both measures have high reliability in all scales except for control. The measures seem to mirror subtle differences between social and health settings, such as democratic versus hierarchical management styles, which demonstrated significant differences between the contrasting Czech samples from the healthcare and social care settings.

A limitation of this study is its lack of representativity – the sample is not representative of the whole population of Czech nurses or social workers, therefore findings have limiting generalizability. Both AWS and MBI-GS questionnaires in the Czech version showed good reliability. One problem seems to be the dimension of control, where the principal component analysis (not presented here) also showed some problems. Low reliability for this scale was also shown in a previous study (Havrdová et al., 2010). The AWS questionnaire therefore requires further changes in the formulation of control items. Its factor structure needs further analysis based on more data from different respondents.

Another limitation is a lack of qualitative information which would help with a deeper understanding of the cultural differences measured by the AWS. These can be observed not only between Canadian and Czech nurses, with regard to self-perception of professional efficacy, but also in particular between the different workplaces. Nurses often work in large institutions with more hierarchical leadership and less control over their jobs, and are therefore much more prone to burnout and turnover, as predicted by Leiter's model (Leiter & Maslach, 2009) due to lower levels of control, value congruence, perceived fairness and reward, and higher workload.

Tanner (2011) mentions that cynicism can be regarded as an ineffective strategy for coping with workplace stressors, and suggests the introduction of interventions at the organizational level, combined with individual interventions to prevent cynicism. Beddoe (2010) summarizes the central components of so-called resilient cultures as follows: promoting participation, recognizing the emotional impact of work stresses, reviewing mistakes to provide opportunities for learning, reviewing effectiveness and providing mutual feedback, and facilitative and supportive supervision at all level of the organization. This last point contributes substantially to all previous ones, and corresponds to the concept of social support and psychological safety as necessary protective factors (Folkman &

Lazarus, 1989; Kahn, 1990; Edmondson, 2003; and others). In our comparison of level of workplace civility in social versus health settings, one of the main differences can be seen in the regular supportive supervision which the social workers receive. The impact of clinical supervision on the level of burnout by nurses has been recognized earlier (Butterwoth et al., 1999; Brunero, 2008; and others). Supportive and reflective supervision can provide both team and individual support, which can contribute to the development of better coping strategies at both levels.

Gender, age and number of years in the organization did not change the predictive pattern of AWS for burnout or the correlations between scales within the instruments. A higher educational level among nurses also led to higher perceived control, reward and value congruence, but also to a higher workload. That also means that with higher education, the nurse is going to be more flexible on the labour market and can move to an organization where there is higher value congruence. This corresponds to our perception that students who develop their careers to the master's level move to organizations where they are able to implement the ideas and vision they develop during their studies. Similarly, we found that the nature of work – either in a small team, a larger collective, or individually – had an important impact on burnout as mediated by control, reward and values. Individual work often means that the nurse acts as an expert in the field, for example in quality management, which means a higher control over the work and recognition as an expert (high reward).

In a previous study based on AWS (Havrdová & Šafr, 2010) we came to conclusion that the value fit with the social organization depends even at the lower employee level on how the organization realizes its mission to support its clients instead of supporting just itself. The high influence of values in the Czech sample might also be a cultural difference from the Canadian and Italian research samples. In the Italian sample (Lasalvia et al., 2009:542) values were totally absent in the model of predictors of burnout.

In Leiter's model, value fit is predicted by rewards, community and fairness. Leiter admits that community has a weaker impact on value congruence and burnout. We would argue, however, that the perception of common values is much more dependent on the behaviour of leaders in the organization than on the community, and that it can be built by various means, one being reward and fairness, and another being trust based on appropriate decisions and the fulfilment of the organizational mission by management. The relationship of trust to shared values and its impact on employee identification with the organization has already been proven (Edwards & Cable, 2009). Although such information is lacking in the present study, this relationship to AWS and burnout requires further study.

The potential value for Czech managers and supervisors of using both instruments as a fast screening device has been proven, and this can be used for further communication with employees to achieve an optimal strategy for their support.

## 9. Conclusion

Previous studies over the past 35 years have proven that burnout, as a negative pole of employee engagement, has serious consequences for mental and physical health. Situational and organizational factors such as civility in the workplace play a more important role than individual factors in the development of this syndrome.

Nurses belong to the professional group at highest risk of burnout. Early signs of burnout in nurses are predictive of turnover. This has important consequences for leaders, managers and supervisors, particularly in the healthcare sector, who are perceived as important sources of support for organizational civility.

Interventions at the organizational level combined with individual interventions should be used to support the building of a resilient culture that promotes participation, recognizes the emotional impact of work stress, reviews mistakes in a safe environment, provides time to review effectiveness, and provides mutual feedback and social support. Clinical supervision has been proven as an important means of building such a culture in the helping organizations and thus contributing to the development of better coping strategies for stress at all levels of the organization.

The burnout-workplace civility model, as researched by AWS and MBI-GS questionnaires, has face validity in the Czech environment. The psychometric analysis of the data shows high reliability on all scales except control, which requires some modification in the formulation of its items or the number of items (currently only three) in future Czech research. The mutual relationships between scales showed higher correlations for values and fairness and values and reward than in the Canadian sample. Fairness and control showed much lower correlations and exhaustion did not correlate with professional efficacy at all, which differed from the Canadian sample. However, the Czech sample is not representative of all Czech nurses, therefore these findings have limited generalizability.

Our data fully supports Leiter's model of the predictive strength of value congruence for all three dimensions of burnout. In our case we suggest taking into consideration the role of trust of an organization's management, which seems more important than just reward and community. These two correlated more weakly with value fit than fairness. Organizational behaviour that is more orientated towards client welfare than the organization's welfare also seems to be important.

The factors of age and length of work in the organization did not influence the data. However, the nursing profession and working in larger collectives in hospitals increased the indicators for burnout. With higher education levels, and thus the ability of nurses to move to organizations that better correspond with their own values and where they are more in control of their work, there is a diminished risk of ineffective coping strategies such as cynicism, which is mediated by lower rewards and lower perception of fairness from the employer.

The level of organizational civility and burnout in our data was similar to levels in Leiter's 2009 Canadian sample. However, we found that Czech nurses scored much lower on self-evaluation of professional efficacy than the Canadian and Italian (Lasalvia et al., 2009) samples. This may reflect sociocultural factors, and be a sign of lower self-esteem leading to higher aspirations which can contribute to a higher risk of burnout. On the contrary, the cynicism score was lower in relation to both samples. Another significant difference was the higher workload perception and higher satisfaction with the community at the workplace among Czech nurses. These differences may be due to the small and non-representative sample.

The analysis has shown that AWS and MBI-GS questionnaires and their underlying models of organizational and individual factors, as contributors to the burnout-engagement

dimension of employee behaviour, mirror differences in organizational settings, and can be useful measures for further communication with employees and development of organizational support systems in the Czech environment. Further research should focus on modification of the AWS control dimension and measurement of trust in management as a special item. Better validation through use of qualitative sources of data is also recommended.

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## 11. References

- Aiken, L.H., Clarke, S.P., Sloane, D.M., Sochalski, J. & Silber, J.H. (2002). Hospital nurse staffing and patient mortality, nurse burnout, and job dissatisfaction. *Journal of the American Medical Association*, 288, 16: 1987–93.
- Andersson, L.M. & Pearson, C.M. (1999). Tit for tat? The spiraling effect of incivility in the workplace. *The Academy of Management Review*, 24, 3: 452–471.
- Appels, A., & Otten, F. (1992). Exhaustion as a precursor of cardiac death. *British Journal of Clinical Psychology*, 31, 351–356.
- Beddoe, L. (2010). *Best practice in professional supervision: a guide for the helping professions*. London: Jessica Kingsley.
- Beehr, T.A. (1995). *Psychological stress in the workplace*. London, New York: Routledge.
- Brunero, S. & Stein-Parbury, J. (2008). The effectiveness of clinical supervision in nursing: an evidence based literature review. *Austr. J. Adv. Nurs.*, 25, 3: 86–94.
- Butterworth, T., Carson, J., Jeacock, J., White, E. & Clements, A. (1999). Stress, coping, burnout and job satisfaction in British nurses: findings from the clinical supervision evaluation project. *Stress Med.* 15: 27–33.
- Cherniss, C. (1980). *Professional burnout in human service organizations*. New York: Praeger.
- Cherniss, C. (1989). Burnout in new professionals: a long-term follow-up study. *Journal of Health and Human Resources Administration*, 12: 11–24.
- Cherniss, C. (1990). Natural recovery from burnout: results of a 10-year follow-up study. *Journal of Health and Human Resources Administration*, 13: 132–154.
- Edmondson, A.C. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly*, 44: 350–383.
- Edmondson, A.C. (2003). Managing the risk of learning: psychological safety in work teams. In: M. West, D. Tjosvold & K. Smith (eds.), *International Handbook of Organizational Teamwork and Co-operative Working*. Chichester: Wiley and Sons.
- Edwards, J.R. & Cable, D.M. (2009) The value of value congruence. *Journal of Applied Psychology*, 94, 3: 654–677.
- Folkman, S., & Lazarus, R.S. (1988). *Manual for the ways of coping questionnaire: Research edition*. Palo Alto, CA: Consulting Psychologists Press.



- Gill, M.J. & Sypher, B.D. (2009). Workplace incivility and organizational trust. In P. Lutgen-Sandvik & B.D. Sypher (eds.), *Destructive organizational communication: processes, consequences, and constructive ways of organizing*. New York: Routledge, pp. 53–74.
- Hallman, T., Thomsson, H., Burell, G., Lisspers, J. & Setterlind, S. (2003). Stress, burnout and coping: differences between women with coronary heart disease and healthy matched women. *Journal of Health Psychology*, 8: 433–445.
- Havrdová, Z. & Šafr, J. (2010). Kongruence v hodnotách jako ukazatel vztahů v péči o seniory. In Havrdová, Z. et al., *Hodnoty v prostředí sociálních služeb*. FHS UK v Praze, Praha, pp. 85–108.
- Havrdová, Z., Šolcová, I., Hradcová, D. & Rohanová, E. (2010). Kultura organizace a syndrom vyhoření. *Československá psychologie*, 64, 3: 235–248.
- Jones, J.G. (1987). Stress in psychiatric nursing. In: Payne, R. & Firth-Cozens, J. (eds.), *Stress in health professionals*. Chichester: Wiley.
- Kahn, W.A. (1990). Psychological conditions of personal engagement and disengagement at work. *The Academy of Management Journal*, 33: 692–724.
- Karasek, R.A. (1979). Job demands, job decision latitude, and mental strain: implications for job redesign. *Administrative Science Quarterly*, 24: 285–308.
- Karasek, R.A. & Theorell, T. (1990). *Healthy work: stress, productivity, and the reconstruction of the working life*. New York: Basic Books.
- Kebza, V. & Šolcová, I. (1998). Burnout syndrom: teoretická východiska, diagnostické a intervenční možnosti. [Burnout syndrome: theoretical sources, diagnostic and treatment possibilities.] *Československá psychologie*, 42: 429–448. [In Czech.]
- Kebza, V. & Šolcová, I. (2008). Syndrom vyhoření: rekapitulace současného stavu poznání a perspektivy do budoucna. [Burnout syndrome - review of contemporary state of knowledge and perspectives for the future.] *Československá psychologie*, 52: 351–365. [In Czech.]
- Kebza, V. & Šolcová, I. (2010). Syndrom vyhoření, vybrané psychologické proměnné a rizikové faktory kardiovaskulárních onemocnění. [Burnout syndrome, selected psychological variables, and risk factors of cardiovascular diseases.] *Československá psychologie*, 54: 1–16. [In Czech.]
- Kimmel, D.C. (2010). Organizational civility. Available at: <http://faculty-staff.ou.edu/K/David.C.Kimmel-1/civility.htm>.
- Kitaoka-Higashiguchi, K., Morikawa, Y., Miura, K., Sakurai, M., Ishizaki, M., Kido, T., Naruse, Y., & Nakagawa, H. (2009). Burnout and Risk Factors for Arteriosclerotic Disease: Follow-up Study. *Journal of Occupational Health*, 51: 123–131.
- Krause, N. (1997). Perceived support, anticipated support, social class, and mortality. *Research on Aging*, 19: 387 - 422.
- Lasalvia, A., Bonetto, C., Bertani, M., Bissoli, S., Cristofalo, D., Marrella, G., et al. (2009). Influence of perceived organizational factors on job burnout: survey of community mental health staff. *Br J Psychiatry*, 195: 537–544.
- Leiter, M.P. (2008). *Civility, respect and engagement at work*. Available at <http://www.workengagement.com/crew>.
- Leiter, M.P. & Laschinger, H.K.S. (2006). Relationships of work and practice environment to professional burnout: testing a causal model. *NursingResearch*, 55, 2: 137–146.

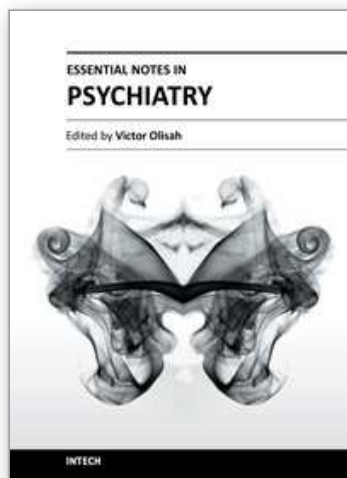


- Leiter, M.P. & Maslach, C. (1999). Six areas of worklife: a model of the organizational context of burnout. *Journal of Health and Human Services Administration*, 21: 472–489.
- Leiter, M.P. & Maslach, C. (2000). *Preventing burnout and building engagement*. San Francisco, CA: Josey Bass Inc.
- Leiter, M.P. & Maslach, C. (2004). Areas of worklife: a structured approach to organizational predictors of job burnout. In P. Perrewe & D.C. Ganster (eds). *Research in Occupational Stress and Well Being* (Vol. 3.): emotional and physiological processes and positive intervention strategies. Oxford, UK: JAI Press/Elsevier, pp. 91–134.
- Leiter, M.P. & Maslach, C. (2009). Nurse turnover: the mediating role of burnout. *Journal of Nursing Management*, 17: 331–339.
- Leiter, M.P. & Shaughnessy, K. (2006). The areas of worklife model of burnout: tests of mediation relationships. *Ergonomia: An International Journal*, 28: 327–341.
- Lepore, S.J., Evans, G.W. & Schneider, M. (1991). Dynamic role of social support in the link between chronic stress and psychological distress. *Journal of Personality Social Psychol*, 61: 899–909.
- Maslach, C. (2011). Burnout and engagement in the workplace: new perspectives. *The European Health Psychologist*, 13, 3: 44–47.
- Maslach, C. & Jackson, S.E. (1986). *The Maslach Burnout Inventory* (2nd ed.). Palo Alto, CA: Consulting Psychologists Press.
- Maslach, C. & Leiter, M.P. (1997). *The truth about burnout: how organizations cause personal stress and what to do about it*. San Francisco: Jossey-Bass.
- Maslach, C., Schaufeli, W. & Leiter, M.P. (2001). Job burnout. *Annual Review of Psychology*, 52: 397–422.
- Melamed, S., Kushnir, T., & Shirom, A. (1992). Burnout and risk factors for cardiovascular disease. *Behavioral Medicine*, 18: 53–60.
- Melamed, S., Shirom, A., Toker, S., Berliner, S., & Shapira, I. (2006). Burnout and risk of cardiovascular disease: Evidence, possible causal paths, and promising research directions. *Psychological Bulletin*, 132: 327–353.
- Sarason, I.G. (1988). Social support, personality, and health. In M.P. Janisse (Ed.), *Individual differences, stress, and health psychology*. New York: Springer Verlag.
- Sarason, B.R., Shearin, E.N., Pierce, G.R., & Sarason, I.G. (1987). Interrelationship between social support measures: Theoretical and practical implications. *Journal of Personality & Social Psychology*, 52: 813–832.
- Schaufeli, W.B., Leiter, M.P., Maslach, C. & Jackson, S.E. (1996). The Maslach Burnout Inventory – General Survey. In MBI Manual (3rd ed) (C. Maslach, S.E. Jackson & M.P. Leiter (eds) Palo Alto, CA: Consulting Psychologists Press, pp. 22–26.
- Schein, E. (1990). *Organizational culture and leadership*. San Francisco: Jossey-Bass.
- Shirom, A. (2003). The effects of work-related stress on health. In M. J. Schabracq, J. A. M. Winnbust, & C. L. Cooper (Eds.) *Handbook of work and health psychology*. (2nd Edition; pp. 63–83). New York, New York: Wiley.
- Shirom, A. (2007). Burnout and physical health. Evidence, possible causal paths, and promising research directions. State-of-the art lecture. 10<sup>th</sup> European Congress of Psychology, Prague, July 3–6 2007.

- Šolcová, I. & Kebza, V. (1999). Sociální opora jako významný protektivní faktor. [Social support as an important protective factor.] *Československá psychologie*, 43: 19-38. [In Czech.]
- Tanner, S. (2011). *People and work*. Tampere: Finnish Institute of Occupational Health. Doctoral dissertation.

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Psychiatry is one of the major specialties of medicine, and is concerned with the study and treatment of mental disorders. In recent times the field is growing with the discovery of effective therapies and interventions that alleviate suffering in people with mental disorders. This book of psychiatry is concise and clearly written so that it is usable for doctors in training, students and clinicians dealing with psychiatric illness in everyday practice. The book is a primer for those beginning to learn about emotional disorders and psychosocial consequences of severe physical and psychological trauma; and violence. Emphasis is placed on effective therapies and interventions for selected conditions such as dementia and suicide among others and the consequences of stress in the workplace. The book also highlights important causes of mental disorders in children.

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